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12313

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CONTENTS

Part 1. 1 *January* 1945

PAGE

Professor E. N. da C. Andrade, Ph.D., D.Sc., F.R.S., President of the Physical Society, 1943–45 . . . . . *frontispiece*

J. S. Preston and G. W. Gordon Smith. The internal resistance of the selenium rectifier photocell, with special reference to the sputtered metal film . . 1

R. F. Barrow and D. V. Crawford. A note on the spectrum of MgO . . 12

T. Vickerstaff. The brightness of present-day dyes 15

H. G. Howell. Resonance in precessional states of diatomic molecules . . 32

H. G. Howell. The spectra of tin and lead hydrides. 37

R. P. Bell. A problem of heat conduction with spherical symmtery . . . 45

S. P. Choong. Coloration and luminescence produced by radium rays in the different varieties of quartz, and some optic properties of these varieties . . 49

L. Pincherle. The polarizing angle for reflection at the boundary between two absorbing media 56

T. J. Rehfisch. Rectangular voltage waves from a low impedance source . . 60

Discussion on papers by L. S. Goddard (*Proc. Phys. Soc.* **56,** 372 (1944)) and L. S. Goddard and O. Klemperer (*ibid.* **56,** 378 (1944)) on Electron microscopes . 63

Corrigendum 66

Recent reports and catalogues 66

Part 2. 1 *March* 1945

W. E. Ballard. The formation of metal-sprayed deposits 67

J. L. Houghton. Combinations of spherical lenses to replace non-spherical refracting surfaces in optical systems 84

D. H. Smith. The non-reflecting termination of a transmission line . . . 90

E. C. Craven. A study of the comparative method of determining gaseous refractivities 97

A. Taylor and H. Sinclair. The influence of absorption on the shapes and positions of lines in Debye-Scherrer powder photographs 108

A. Taylor and H. Sinclair. On the determination of lattice parameters by the Debye-Scherrer method 126

John Job Manley. Recent improvements in a precision balance and the efficacy of rhodium plating for standard weights 136

Reviews of books 145

Corrigendum 146

Recent reports and catalogues 146

Part 3. 1 *May* 1945

R. F. Bishop, R. Hill and N. F. Mott. The theory of indentation and hardness tests 147

J. B. Nelson and D. P. Riley. An experimental investigation of extrapolation methods in the derivation of accurate unit-cell dimensions of crystals . . 160

W. E. Perry. Wall- and salt-absorption corrections in radium-content measurements 178

PAGE

W. E. Duncanson and C. A. Coulson. Theoretical shape of the Compton profile for atoms from H to Ne 190

E. H. Linfoot. Achromatized plate-mirror systems 199

William Hume-Rothery. On Grüneisen's equation for thermal expansion . . 209

H. G. W. Harding. Illuminants for colorimetry and the colours of total radiators . 222

H. Mikhail and Y. L. Yousef. On the measurement of the effective area of a search coil 238

Discussion on paper by W. E. Ballard entitled "The formation of metal-sprayed deposits" 242

Obituary notices:

Sir Arthur Eddington 244

Charles Glover Barkla 249

John Roderick Ennis Smith 253

Marius Hans Erik Tscherning 253

John Keats Catterson-Smith 254

Reviews of books 255

Recent reports and catalogues 258

Part 4. 1 *July* 1945

F. W. Aston, F.R.S., Twenty-first Duddell Medallist . . . . . *facing* 259

C. N. Davies. Definitive equations for the fluid resistance of spheres . . . 259

Meghnad Saha, F.R.S. A physical theory of the solar corona 271

T. Smith, F.R.S. On tracing rays through an optical system 286

David Owen. Directional loci in a magnetic field, and the locating of neutral points 294

A. L. M'Aulay and F. D. Cruickshank. A differential method of adjusting the aberration of a lens system. 302

A. J. Guinier. Imperfections of crystal lattices as investigated by the study of x-ray diffuse scattering 310

A. Morris Thomas and W. L. Gent. Permeation and sorption of water vapour in varnish films. 324

F. D. Cruickshank. A system of transfer coefficients for use in the design of lens systems: I. The general theory of the transfer coefficients 350

F. D. Cruickshank. A system of transfer coefficients for use in the design of lens systems: II. A second-order correction term 362

Reviews of books 368

Corrigenda 370

Part 5. 1 *September* 1945

K. Mendelssohn. The frictionless state of aggregation 371

A. M. Binnie. A double-refraction method of detecting turbulence in liquids . 390

F. Gilbert Brown. Exact addition formulae for the axial spherical aberration and curvature of field of an optical system of centred spherical surfaces . . . 403

Y. L. Yousef. Dynamic measurement of Young's modulus for short wires . . 412

F. D. Cruickshank. A system of transfer coefficients for use in the design of lens systems: III. The contributions to the image aberrations made by the individual surfaces of a lens system 419

F. D. Cruickshank. A system of transfer coefficients for use in the design of lens systems: IV. The estimation of the tolerances permissible in the production of an optical system 426

PAGE

F. D. CRUICKSHANK. A system of transfer coefficients for use in the design of lens systems : V. Transfer coefficients for the astigmation at small aperture and finite obliquity 430

A. L. M'AULAY. A transfer method for deriving the effect on the image formed by an optical system from ray changes produced at a given surface 435

E. F. CALDIN. The relation between the brightness and temperature of a total radiator 440

Reviews of books 444

Part 6. 1 *November* 1945

RAGNAR GRANIT. The electrophysiological analysis of the fundamental problem of colour reception. Fourteenth Thomas Young Oration 447

ARTURO DUPERIER. The geophysical aspect of cosmic rays. Twenty-ninth Guthrie Lecture 464

J. B. NELSON and D. P. RILEY. The thermal expansion of graphite from 15° C. to 800° C. : Part I. Experimental 477

D. P. RILEY. The thermal expansion of graphite : Part II. Theoretical . . . 486

A. CHARLESBY. Structure and orientation in thin films of polythene 496

A. CHARLESBY. Effect of temperature on the structure of highly polymerized hydrocarbons 510

J. C. JAEGER. Note on diffusion in the ionosphere 519

S. R. PELC. The photographic action of **x** rays 523

D. H. SMITH. A method for obtaining small mechanical vibrations of known amplitude 534

T. SMITH, F.R.S. Theoretical investigation on telephoto lenses 543

T. SMITH, F.R.S. Variational formulae in optics 558

F. W. CUCKOW. The electron microscope and its applications 564

C. R. BURCH, F.R.S. Flat-fielded singlet aplanats 567

Demonstrations :

A Franck and Hertz critical potential experiment, by J. H. SANDERS . . . 577

Apparatus illustrating the Michelson stellar interferometer, by P. J. TREANOR, S.J. 579

Obituary notices :

JOHN AMBROSE FLEMING 581

SIDNEY SKINNER 584

LIONEL ROBERT WILBERFORCE 585

JAMES YOUNG 585

Reviews of books 586

Index to Volume 57 591

Index to Reviews of books 596

Proceedings at the Meetings, Session 1944–45 vi

Report of Council for the year 1944 xiii

Report of the Honorary Treasurer for the year 1944 xvii

E. N. da C. ANDRADE, F.R.S., The history and future of the Physical Society. Presidential Address xxi

PROCEEDINGS AT THE MEETINGS OF THE PHYSICAL SOCIETY

SESSION 1944–45

20 *September* 1944

The eighteenth meeting of THE COLOUR GROUP, at the Lighting Service Bureau, Savoy Hill, London W.C. 2, Mr. J. Guild being in the Chair.

A lecture entitled " Illuminants for colorimetry and the colours of total radiators " was delivered by H. G. W. Harding, B.Sc., and was followed by an informal discussion.

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29 *September* 1944

The thirteenth meeting of THE OPTICAL GROUP, at Imperial College, London S.W. 7, Professor A. O. Rankine being in the Chair.

A demonstration of " High-intensity projectors for stereoscopic screen projection " was given by A. C. W. Aldis, M.A.

The following papers were read and discussed :

" The monochromatic aberrations ", by H. H. Hopkins, Ph.D. ;

" Transfer method for deriving the effect on the image formed by an optical system from ray changes produced at a given surface ", by Professor A. L. M'Aulay.

" A differential method of adjusting the aberration of a lens system ", by Professor A. L. M'Aulay and F. D. Cruickshank, B.Sc.

" A system of transfer coefficients for use in the design of lens systems ", by F. D. Cruickshank, B.Sc.

(A summary of the last three papers was presented by Dr. C. G. Wynne.)

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24 *October* 1944

Science Meeting, at the Cavendish Laboratory, Cambridge, the President, Professor E. N. da C. Andrade, being in the Chair.

A lecture on " Active nitrogen " was delivered by Professor S. K. Mitra, D.Sc., and was followed by an informal discussion.

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27 *October* 1944

Science Meeting, at Imperial College, London S.W. 7, the President, Professor E. N. da C. Andrade, being in the Chair.

The following were elected to Fellowship : John Norman Aldington, Arthur Joseph Hughes, Cyril James Henry Monk, Wilfred Ernest Watson-Baker, Charles Gorrie Wynne.

It was announced that the Council had elected the following to Student Membership : Rafael Armenteros, Gordon John Bell, Maurice Arthur Cayless, Rex Herbert Coffin, Montague Cohen, Derek H. Cole, Dennis Henry Colvill, Robert William Cranston, Peter Crosby, Michael William Feast, Lily Irene Gadd, Malcolm Hobson Green, Joan Irene Harper, Ronald Bertie Ide, Clifford Philip Newman, Donald Perkins, Thomas Henry Richardson, Peter Henry Rose, Hilmi Samara, Vera Mary Scamans, Beta May Sparkes, John Henry Strong, George Geoffrey Twidle, R. J. Wakelin.

Demonstrations of " Rectangular voltage waves from a low-impedance source " were given by T. J. Rehfisch.

The following papers were read and discussed:

"The computation of electron trajectories in axially symmetric fields", by L. S. Goddard, B.Sc.;

"Electron ray tracing through magnetic lenses", by L. S. Goddard, B.Sc., and O. Klemperer, Dr.Phil.

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31 *October* 1944

Science Meeting, held jointly with the British Institution of Radio Engineers in the rooms of the Institution of Structural Engineers, Upper Belgrave Street, London S.W. 1, Mr. L. McMichael being in the Chair.

A lecture entitled "Physics and radio" was delivered by Professor E. N. da C. Andrade, F.R.S., and was followed by an informal discussion.

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9 *November* 1944

Science Meeting, at The Royal Society, Burlington House, London W. 1, the President, Professor E. N. da C. Andrade, being in the Chair.

The following were elected to Fellowship: William George Atkins, Reginald John Bartle, Cyril Arnold Bridgewater, Cyril Bristow, Kenneth George Brummage, James Alexander Burns, Clifford Charles Butler, Michael Anthony Grace, Geoffrey Grime, R. W. James, Sidney Gabriel Richard Lindboe, Kenneth Alexander McMurtrie, Jozef Mazur, Mohamed Gamal El-Din Nooh, Hubert Derrick Parbrook, Jerzy Skrebowski, Robert Harbinson Sloane, Andrew David Thomas, Charles Edney Wheeler, Walther Wolff.

The President delivered the following address:

"We welcome to-day certain of our French comrades in physics, members of our sister society, la Société française de Physique. We have here Professor G. A. Boutry, Professor P. Auger and Dr. S. Rosenblum. Through the kind offices of M. Boutry, professeur au Conservatoire national des Arts et Métiers, and a Fellow of our Society, I have received a brief account of the history of the Société since the outbreak of war. In it the President, Professor J. Cabannes, records the lamentable fate of many members whose names are known to, and honoured by, all of us. I will ask you to stand, as a token of respect, while I read the names of those who have died.

G. Dechêne, J. Farineau, H. du Mesnil du Buisson and J. Rossignol fell on the field of honour in the early battles.

F. Holweck, who made his name famous by his pump and by other ingenious instruments, by his work on soft X rays and by other notable researches, was murdered by the Gestapo; and J. Solomon, one of the most promising of the younger theoretical physicists, was shot by the German military authorities.

Deaths that we have to deplore, some no doubt accelerated by the traditional brutalities of the Germans, are those of H. Buisson, H. Chipart, A. Dufour, A. Guillet, Victor Henri, Jean Perrin (Foreign Member of the Royal Society and Honorary Fellow of our Society), Emile Picard (likewise a Foreign Member of the Royal Society) and Pierre Weiss.

Besides those who are known definitely to have lost their lives, there are others whose ultimate fate is unknown. H. Abraham, Eugene Bloch, G. Bruhat, L. Cartan, C. Sadron and J. Yvon have been deported to Germany, and we dare scarcely hope that they have found humane treatment there. Of Paul Langevin, who received in 1940 the highest honour that the Royal Society has to give, the Copley Medal, we have no news, unless M. Boutry has something to tell us.

Let me assure our French friends that although, as Mr. Eden said yesterday, 'People in Britain do not yet fully understand how complete, how merciless, how dastardly has been the devastation inflicted by the German armies in Allied lands

as they withdrew', some of us here have some comprehension of German brutality and are not anxious to welcome back in our midst the representatives of German science who also represent German unscrupulousness, German opportunism and German dishonour.

I am glad to be able to inform the Physical Society that all through the troublous days of the German occupation, zealous and courageous French colleagues have kept alive the science of physics in France. In June 1941 appeared a new publication, the *Cahiers de Physique*; and the first number of another new publication, the *Annales de Géophysique*, is at this moment in the press. We congratulate our French brethren on the success of their strenuous efforts.

M. Boutry, Au nom de la Physical Society je vous prie de bien vouloir saluer de notre part nos camarades de la Société française de Physique et de leur dire combien nous regrettons le lamentable sort de nos confrères, victimes du maudit système Nazi, ou plutôt allemand, combien nous espérons voir renaître dans toute leur gloire traditionelle et la France et la physique française. Nous avons remarqué avec la plus vive emotion comment, au milieu de tant de dangers et de difficultés, les physiciens français ont continué leurs travaux desinteressés. Tout ce que la Physical Society peut faire pour encourager et appuyer nos collègues, nos amis français, soyez assuré que ce sera fait. C'est pour nous un très grand honheur de pouvoir désormais renouveler nos cordiales et traditionelles relations avec la Société française de Physique. Cher collègue, soyez le bienvenu."

A lecture on "The night sky" was delivered by Professor S. K. Mitra, D.Sc., and was followed by an informal discussion.

---

22 *November* 1944

The nineteenth meeting of THE COLOUR GROUP, at Imperial College, London S.W. 7, Mr. J. Guild being in the Chair.

A lecture entitled "Retinal structure and colour vision" was delivered by E. N. Willmer, M.A., B.Sc., and was followed by an informal discussion.

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23 *November* 1944

Science Meeting, at the Royal Society, Burlington House, London W. 1, the President, Professor E. N. da C. Andrade, being in the Chair.

Kenneth Conrad Bryant, Deryck Chesterman and Peter Savic were elected to Fellowship.

The President announced the death, on the previous day, of Sir Arthur Eddington, O.M., F.R.S., (President 1930–32) and read an account of Sir Arthur's life and work.

A lecture on "A physical theory of the solar sorona" was delivered by Professor M. N. Saha, D.Sc., F.R.S., and was followed by an informal discussion.

---

24 *November* 1944

The fourteenth meeting of THE OPTICAL GROUP, at Imperial College, London S.W. 7, Professor A. O. Rankine, being in the Chair.

The following papers were read and discussed:

"Notes on the evolution of the inverting eyepiece", by E. Wilfred Taylor;

"Achromatism of two thin separated lenses and of a cemented doublet", by Instr.-Capt. T. Y. Baker.

A demonstration of "A new modification of a ray plotter" was given by Mr. B. K. Johnson.

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19 *January* 1945

Science Meeting, at The Royal Society, Burlington House, London W. 1, the President, Professor E. N. da C. Andrade, being in the Chair.

The following were elected to Fellowship: William Fordham Cadmore Cooper, Zygmunt Alexander Klemensiewicz, Kenneth Herbert Spring, Harry Verdon Stopes-Roe, William John Wilson.

It was announced that the Council had elected the following to Student Membership: Denys Osmund Akhurst, Charles Anthony Arkell, Gordon Burnand, Alfred Norman Burton, David Keith Butt, Derek Young Coomber, Christian Ellis Coulman, Ronald Dee, Gerald Morley Habberjam, Roy Hayes, Gerald Alfred Jackson, John Lister, Harold Frederick William Mander, Alan Pearce Morgan, Clifford Philip Newman, Arthur Coates Parker, Thomas Frederick Porter, John Alexander Pryde, Geoffrey Cecil Pyle, Derek William Saunders, Geoffrey George Smith, Derek Malcolm Thomas, Maurice William Tulett, Sidney John Walton, John Woods, Peter Robert Wyke.

The President read an appeal, copies of which were afterwards posted to Fellows and friends of the Society, for contributions to a Holweck Prize Fund.

A lecture on "Imperfections of crystal lattices as investigated by study of x-ray diffuse scattering" was delivered by Dr. A. J. Guinier and was followed by an informal discussion.

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7 *February* 1945

The twentieth meeting of THE COLOUR GROUP, at the School of Photo-Engraving and Lithography, Bolt Court, Fleet Street, London E.C. 4, Mr. J. Guild being in the Chair.

Mr. H. M. Cartwright gave a lecture and demonstrations on "Colour printing and problems of colour reproduction", which were followed by an informal discussion.

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16 *February* 1945

The fifteenth meeting of THE OPTICAL GROUP, at Imperial College, London S.W. 7, Professor A. O. Rankine being in the Chair.

The following papers were read and discussed:

"The properties of some new optical glasses", by R. E. Bastick, Ph.D.

"Routine refractometry for optical glasses", by W. C. Hynd, M.Sc.

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23 *February* 1945

Science Meeting, at the Science Museum, London S.W. 7, the President, Professor E. N. da C. Andrade, being in the Chair.

The following were elected to Fellowship, all but the first ten being transferred from Student Membership: Ernest Reginald Adams, Reginald Joseph Cole, Ernest Cecil Craven, Irena Gimpel, Franklin Stewart Harris, Charles Robert Sinden Manders, Ronald Gladstone Mitton, Leonard Eugene Newnham, Albert Hickford Turnbull, Edward Leighton Yates; Alan Wawn Agar, Norman Rushton Bailey, Roderick Kirkwood Barnes, Dennis Stanley Beard, Clifford Henry James Beaven, Margaret Elizabeth Jane Carr, Isabel Helen Cox, Donald Watts Davies, Joseph William Fox, Keith Davy Froome, Richard Mead Goody, Norman John Harris, Kenneth William Hillier, Mervyn Guy Newcomen Hine, George Francis Hodsman, Francis Raymond Holt, Denys Sydney Hopper, Howard Arthur Hughes, Robert William Gainer Hunt, William Alan Jennings, Peter Reginald Layton, Ian Alexander Darroch Lewis, Derrick Joseph Littler, Emlyn Howard Lloyd, Thomas Alan Minns, Peter Lloyd Morgan, John Pollard, William Leslie Roberts, James Richard Stansfield, Denis Warwick Stops, Bernard Sugarman, Rudolf Arnold Wiersma.

It was announced that the Council had elected the following to Student Membership : Fritz K. Bauchwitz, Michael Somerset Ridout, Keith Varnden Roberts, John Roy Schofield, Derek Anthony Silverston, Wladyslaw Jerzy Swiateki.

A lecture on " The electron microscope and its applications " was delivered by F. W. Cuckow, B.Sc., and was followed by an informal discussion.

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9 *March* 1945

Science Meeting, at Imperial College, London S.W. 7, Brigadier J. L. P. MacNair, Fellow, being in the Chair.

The following were elected to Fellowship, the last four being transferred from Student Membership : Bengt Edlén, Adolf Schallamach, Claude Ivan Snow, William Ernest Arnould Taylor ; Harold Raynor Allan, Alan Stephen Edmondson, Roy Heastie, Geoffrey Sherwood Waters.

The following papers were read and discussed :

" The formation of metal-sprayed deposits " (with demonstration), by W. E. Ballard, F.R.I.C. ;

" The theory of indentation and hardness tests ", by R. F. Bishop, B.A., R. Hill, B.Sc., and N. F. Mott, M.A., F.R.S.

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21 *March* 1945

The twenty-first meeting of THE COLOUR GROUP, at Imperial College, London S.W. 7, Mr. J. Guild being in the Chair.

A paper on " The presentation of the C.I.E. system of colour specification " was read by R. K. Schofield, M.A., Ph.D., and was followed by an informal discussion.

The meeting was preceded by the fifth *Annual General Meeting of the Colour Group* for the presentation of the Committee's report on the work of the Group in 1944–45 and for the election of Officers and Committee for 1945–46.

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20 *April* 1945

The sixteenth meeting of THE OPTICAL GROUP, at Imperial College, London S.W. 7, Instr.-Capt. T. Y. Baker being in the Chair.

The following papers were read and discussed :

" A theoretical investigation on telephoto lenses ", by T. Smith, M.A., F.R.S. ;

" On tracing rays through an optical system " (fifth paper), by T. Smith, M.A., F.R.S. ;

" Exact addition formulae for the axial spherical aberration and curvature of field of an optical system with centred spherical surfaces ", by F. Gilbert Brown.

The meeting was preceded by the fourth *Annual General Meeting of the Optical Group* for the presentation of the Committee's report on the work of the Group in 1944–45 and for the election of Officers and Committee for 1945–46.

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23 *May* 1945

Science Meeting, at the Royal Institution, Albermarle Street, London W. 1, the President, Professor E. N. da C. Andrade, being in the Chair.

The following were elected to Fellowship, all but the first three being transferred from Student Membership : Raymond Frederick Cyster, Hubert Leslie Hulland, Archibald Charles Lock ; Arthur Reginald Bevan, Jack Dunkley, Clifford McDonald Hargreaves, George Albert Mann, Ernest Henry Putley, Alan Stott, Laurence William Stevens Wilson.

It was announced that the Council had elected the following to Student Membership : James Howard Barrett, Cyril Eugene Challice, Francis Maurice Comerford, Peter Brian Curtis, Reginald Leslie Gleave Gilbert, Rita Joyce Hancock, Hugh Donald Hemmer, Ralph Ewart Hickman, James Alexander Leys, Peter Murden, Raymond Peter William Scott.

The twenty-first Duddell Medal was presented to Dr. F. W. Aston, F.R.S., in recognition of his invention and development of the mass spectrograph.

Professor Andrade delivered his Presidential Address on " The history and future of the Physical Society "*.

* This volume, p. xxi.

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23 *May* 1945

Annual General Meeting, at the Royal Institution, Albermarle Street, London W. 1, the President, Professor E. N. da C. Andrade, being in the Chair.

The minutes of the previous Annual General Meeting and of the Extraordinary General Meeting, held on 24 May 1944, were read and accepted as correct.

The reports of the Council and the Honorary Treasurer and the Annual Accounts for 1944 were adopted.

The Officers and Council and the Auditors for 1945–46 were elected.

Votes of thanks were accorded to the Rector and Governing Body of Imperial College, the President and Council of the Royal Society, the Managers of the Royal Institution, and the Director of the Science Museum for excellent accommodation at meetings ; to the Royal Commission for the Exhibition of 1851 and Dr. Evelyn Shaw for the office and library accommodation at 1 Lowther Gardens, Exhibition Road, London S.W. 7 ; to Dr. A. F. C. Pollard for preparing the U.D.C. Index Slips for the *Proceedings* ; and to the retiring Officers and Council.

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30 *May* 1945

The twenty-second meeting of THE COLOUR GROUP, at the Royal Photographic Society, 16 Prince's Gate, London S.W. 7, Dr. R. K. Schofield being in the Chair.

A lecture on " Colour television " was delivered by L. C. Jesty, B.Sc., M.I.E.E., and was followed by an informal discussion.

---

8 *June* 1945

Science Meeting, at Imperial College, London S.W. 7, the President, Professor D. Brunt, being in the Chair.

The following were elected to Fellowship, the last four being transferred from Student Membership : Ronald George Allen, Jack Dainty, Douglas William Nicol Dolbear, André Jean Guinier, Harold Horace Hopkins, Richard Albert Hull, Günther Loeck, Hans Motz, Stefan Richard Pelc, Harry Hemley Plaskett, Robert Arthur Scott, David Starkie, Leonard Walden ; Frederick Henry East, Arnold Stanley Knight, Douglas Henry Peirson, Harry Pratt.

The President read a letter from Professor C. Fabry giving further bad news of the fate of French physicists, supplementing that given at the meeting of 9 November 1944.

The following demonstrations were given and discussed :

" Directional loci in a magnetic field and the locating of neutral points ", by D. Owen, B.A., D.Sc. ;

" A simple form of refractometer of the Jamin type ", by H. G. Kuhn, Dr.Phil., and G. A. Wheatley, B.A. ;

" A demonstration model of Michelson's stellar interferometer ", by P. J. Treanor, S.J., B.A. ;

" A Franck-and-Hertz critical-potential experiment, arranged for demonstration with a cathode-ray oscillograph ", by J. H. Sanders, B.A. ;

" A water-operated model klystron ", by W. J. Scott.

---

22 *June* 1945

The seventeenth meeting of THE OPTICAL GROUP, at Imperial College, London S.W. 7, Instr.-Captain T. Y. Baker being in the Chair.

A lecture on " Instrument design " was delivered by A. F. C. Pollard, D.Sc.

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29 *June* 1945

Science Meeting, at the Royal Institution, Albemarle Street, London W. 1, the President, Professor D. Brunt, being in the Chair.

The following were elected to Fellowship, the last two being transferred from Student Membership: John Frank Allen, Samuel Thomas Adrian Hall, George Arkla Harle, Oscar Martin Lee, Thomas Henry Pearn, Leslie Ward; George Matthew Leak, Leslie Hamilton Tarrant.

It was announced that the Council had elected the following to Student Membership: Norman Brooke, Donald H. Brown, Eric Lionel Ferguson, Sylvia Mary Gumbrell, Ronald Mayoh, William Stanford Michael.

The President announced that the Foreign Secretary, Professor E. N. da C. Andrade, was representing the Society at the meetings in Moscow and Leningrad to celebrate the 220th anniversary of the foundation of the Academy of Sciences of the U.S.S.R.

The fourteenth Thomas Young Oration was delivered by Professor Ragnar Granit, who took as his subject: " The electrophysiological analysis of the fundamental problem of colour reception ".

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6 *July* 1945

Science Meeting, at the Royal Institution, Albemarle Street, London W. 1, the President, Professor D. Brunt, being in the Chair.

The following were elected to Fellowship: William Cyril Barry, Owe Berg, Herbert Cornes, Thomas Peter Taylor, Henry William H. Warren.

The twenty-ninth Guthrie Lecture was delivered by Professor Arturo Duperier, who took as his subject: " The geophysical aspect of cosmic rays ".

REPORT OF COUNCIL FOR THE YEAR ENDED 31 DECEMBER 1944

INTRODUCTORY AND GENERAL

The year under review was one of steady progress in difficult circumstances and of preparation for much greater activities in the not far distant future. The membership has increased, the Science Meetings have been remarkably successful, and the Colour and Optical Groups have continued their very useful work without setback or slackening of pace.

It has again proved possible to maintain a satisfactory financial position without increasing the basic rates of Fellows' and Student Members' annual subscriptions or the rate of outside subscriptions to the *Proceedings*.

Preliminary steps have been taken towards the resumption of the Society's Annual Exhibition of Scientific Instruments and Apparatus, the 30th exhibition being planned for January 1946.

Much consideration has been given during the year to the co-ordination of the activities of our Society and the Institute of Physics, especially in regard to post-war publications and the formation of Groups for the discussion of certain subjects. Steps have been taken to set up a Joint Committee of the two bodies to discuss these and other matters of common interest and importance.

The Society has supported the work of the Parliamentary and Scientific Committee by taking up corporate membership, and is represented on the Executive Committee by Professor E. N. da C. Andrade, who has been elected a Vice-President of the Committee.

The Council has decided that an application for the incorporation of the Society under Royal Charter shall be made when such a course becomes possible.

Preliminary consideration has been given to the question of the future housing of the Physical and other scientific Societies. The President, Professor E. N. da C. Andrade, represented the Society on a delegation, headed by the President of the Royal Society, which was received on 13 October 1944 by the Lord President of the Council, the Chancellor of the Exchequer and the Minister of Works and Buildings. Statements of the needs of the societies concerned are now being prepared and considered.

Through the generosity of the Royal Commission for the Exhibition of 1851, the Society continues to have excellent office and library accommodation at 1 Lowther Gardens, South Kensington. Acute shortage of office staff hampered the day-to-day work of the Society for nearly the whole year, but such difficulties will, it is hoped, be resolved in the near future.

MEETINGS

An Annual General Meeting was held at Imperial College on 24 May 1944 for the presentation of the 1943 Reports of the Council and the Honorary Treasurer, and for the election of the Officers and Council for 1944–45. This was followed by an Extraordinary General Meeting for the election of Professor A. F. Joffé, Vice-President of the Academy of Sciences, Moscow, as an Honorary Fellow of the Society.

Eleven Science Meetings were held during the year: four at Imperial College, two in the rooms of the Royal Society, one each at the Royal Institution, the Clarendon Laboratory and the Cavendish Laboratory, and two (jointly with other bodies) elsewhere. Two of the meetings were devoted to the Guthrie Lecture noted below, and three to special lectures on "Active Nitrogen" and "The Night Sky" by Professor S. K. Mitra, and "A Physical Theory of the Solar Corona" by Professor M. N. Saha (*Proceedings*, **57** (1945), p. 271). At three meetings discussions were held on "Band Spectra and Energies of Dissociation of Diatomic Molecules", opened by Dr. A. G. Gaydon (*Proceedings*, **56** (1944), p. 204), and "Physics and the Scientific Instrument Industry", opened by Mr. A. J. Philpot (*Proceedings*, **56** (1944), pp. 263 and 396), and a lecture-survey on "Current Problems of Visual Research" was delivered by Dr. W. S. Stiles (*Proceedings*, **56** (1944), p. 329). At one meeting Demonstrations of Rectangular Voltage Waves were given by Dr. T. J. Rehfisch (*Proceedings*, **57** (1945), p. 60) and papers on Electron Trajectories and Ray-tracing by Mr. L. S. Goddard and Dr. O. Klemperer were read and discussed (*Proceedings*, **56** (1944), pp. 372 and 378, and **57** (1945), p. 63). One meeting was held

jointly with the British Institution of Radio Engineers for a lecture by Professor E. N. da C. Andrade entitled "Physics and Radio", and one jointly with the Plastics Group of the Society of Chemical Industry for a lecture by Dr. W. T. Astbury on "X-ray Examination of Plastics".

The liberation of France has been quickly followed by the renewal of contact with our colleagues of the Société française de Physique. This was made the occasion of a brief but moving ceremony at the Science Meeting on 23 November.*

The Council records its thanks for hospitality extended during the year to the Society and its two Groups by the President and Council of the Royal Society, by the Rector and Governing Body of Imperial College, by the Managers of the Royal Institution, by the Electric Lamp Manufacturers' Association and by the Director of the Science Museum.

GUTHRIE LECTURE

The twenty-eighth Guthrie Lecture was delivered on 26 April at the Royal Institution and on 29 April at the new Clarendon Laboratory, Oxford, by Professor Joel H. Hildebrand (University of California), who took as his subject "The Liquid State" (*Proceedings*, 56 (1943), p. 221.

RUTHERFORD MEMORIAL LECTURE

The second Rutherford Memorial Lecture, on Rutherford's work after the Manchester period, should have been delivered by Professor J. D. Cockcroft in the early autumn of 1944, but was unavoidably postponed on account of the Lecturer's prolonged absence from this country. Arrangements will be made for the Lecture as soon as possible.

DUDDELL MEDAL

The Council awarded the twenty-first Duddell Medal to Dr. F. W. Aston in recognition of his invention and subsequent improvement of the mass spectrograph. The presentation of the Medal could not be made in 1944, but will take place at a Science Meeting as early as can be arranged.

THE R. W. PAUL INSTRUMENT FUND

In accordance with the will of the late Mr. Robert W. Paul, a Fund, consisting of Ordinary Shares in the Cambridge Instrument Company valued for probate at £110,036 10*s*., has been established for the provision of facilities (equipment, building, staff or financial aid) for "the design, construction and maintenance of novel, unusual or much improved types of physical instruments and apparatus needed for an investigation in pure and applied physical science and . . . the advance of knowledge and the arts, where a relatively large expenditure may be justifiably risked on experimental apparatus . . ." The application of the income is to be directed, controlled and administered by a Committee of six members, of whom three are appointed by the Royal Society and one each by the Physical Society, the Institution of Electrical Engineers and the Institute of Physics. If no grant is made for a period of seven consecutive years, the capital, future income and accumulation of income are thereafter to be held in trust for the Royal Society, the Royal Institution and the Physical Society in equal shares for their general purposes.

The Council has appointed Professor A. O. Rankine as the representative of the Physical Society on the Committee.

CHARLES VERNON BOYS PRIZE

By the will of the late Sir Charles Boys, a former President, a nett legacy of £900 was bequeathed to the Society, and the Council has decided that the interest shall be used for the institution of the Charles Vernon Boys Prize, to be awarded annually, without restriction of nationality or of Fellowship of this or any other Society, for distinguished research in experimental physics, either still in progress or carried out within the five years preceding the date of the award. The first award of the Prize will be made in 1945.

* The address delivered by the President on this occasion is recorded under "Proceedings at the Meetings" on pp. vii–viii of this volume.

ADDENBROOKE BEQUEST

Through the generosity of Mrs. B. E. F. Addenbrooke, and by the wish of her late husband, Mr. G. L. Addenbrooke, a Fellow of the Society, Government Stock to the value of about £315 has been bequeathed to the Society. With the approval of the executors, the Council has decided that the interest on this bequest shall be used in the first instance for an annual purchase, starting in 1945, of standard books and other books of outstanding merit and usefulness on "the structure, properties and behaviour of non-metallic substances". The volumes so purchased will be suitably inscribed and placed in a special section of the Society's Library, and their titles will be announced in the Notices to Members and communicated to appropriate bodies.

PROCEEDINGS

Volume **56** (1944) of the *Proceedings* appeared in the usual six two-monthly parts, but was about 20 per cent smaller than the 1943 volume ; the reduction in size has made possible a desirable increase in the number of copies printed, although the official allowance of paper has remained unchanged. The increased charges for advertisements reported a year ago came into effect by the end of the year ; the space taken was exactly the same as in the 1943 volume. Two more Parts of Volume **54** (1942) which had run out of stock have been reprinted.

The Council is again deeply indebted to Professor A. F. C. Pollard for his invaluable help in the preparation of the Universal Decimal Classification Index Slips, which are supplied with the *Proceedings* to all members and subscribers who make application for them in advance.

REPORTS ON PROGRESS IN PHYSICS

While physicists remain so busily engaged on work of the highest importance for the Allied cause, and while the supply of paper remains so meagre, it has again been decided that the next Volume must, like its immediate predecessor, cover two years instead of one ; volume **10** (1944–45) is in active preparation and should be ready early in 1946. The sales of all the available volumes, **5** (1938) – **9** (1942–43), have continued to be very satisfactory, and the remaining stock of Vol. **5** became exhausted towards the end of the year. Vol. **4** (1937), which has been out of print for several years, but which is still in big demand, is being reprinted, and should be available in the summer of 1945. The Council again records its thanks to Miss M. M. Mitchell, the Publications Manager of the American Institute of Physics, for her valuable co-operation in the supplying of copies of the *Reports* to American physicists.

REPRESENTATION ON OTHER BODIES

The representatives of the Society on the National Committees for Physics and for Scientific Radio, on the Committee of Management of *Science Abstracts*, on the Board of the Institute of Physics and on the Council of the British Society for International Bibliography were the same in 1944 as were reported a year ago. As mentioned elsewhere in this Report, the Society is represented by Professor E. N. da C. Andrade on the Parliamentary and Scientific Committee and by Professor A. O. Rankine on the R. W. Paul Instrument Fund Committee.

MEMBERSHIP

A limited edition of the List of Officers and Members, corrected to 30 September 1944, has been printed. It is satisfactory to be able to record a notable growth of membership for the fourth year in succession. As the following table shows, the Fellowship increased in 1944 by 5·3 per cent and the Student Membership by nearly 3 per cent, making an increase in the total membership of nearly 5 per cent, which is less than in 1942 and in 1943. The most welcome feature of the table is the large number of newly elected Fellows, which was exceeded in only one previous year, 1942.

Roll of Membership		Hon. Fellows	Hon. Fellows, Optical Society	*Ex-officio* Fellows	Fellows	Student Members	Total
Totals, 31 Dec. 1943		10	3	4	1032	271	1320
Changes during 1944	Newly elected	1			56 } 79	52	
	Transferred				23 }	23 }	
	Deceased		1		12 }	1 } 44	
	Resigned				7 }	3 }	
	Lapsed				4 } 24	17 }	
	Suspended				1 }		
	Net increase	1	−1		55	8	63
Totals, 31 Dec. 1944		11	3	4	1087	279	1383

OBITUARY

The Council records with regret the deaths of the following Fellows :—Mr. C. T. Archer, Sir Charles V. Boys, (Past President) Mr. J. W. Bullerwell, Mr. A. W. Claydon, Sir Arthur S. Eddington (Past President), Mr. J. C. R. Le Manquais, Sir Thomas R. Lyle, Professor H. F. Newall, Dr. J. K. Roberts, Mr. A. C. Shearman, Principal S. Skinner. Professor M. L. E. Tscherning (Honorary Fellow of the Optical Society), Professor L. R, Wilberforce, and the death of a Student Member, Dr. J. R. Ennis Smith.

COLOUR GROUP

At the fourth Annual General Meeting of the Group, which was held at Imperial College on 8 March 1944, Mr. J. Guild was re-elected as Chairman, Dr. W. D. Wright was elected as Honorary Secretary, and the Committee for 1944–45 was elected.

Five Science Meetings were held during the year. Three of them were at Imperial College on 26 January, 8 March and 22 November, the subjects discussed being " The brightness of present-day dyes " (paper by Dr. T. Vickerstaff, *Proceedings*, **57** (1945), 15), " Colour vision deficiency in industry " (paper by Professor J. H. Shaxby), and " Retinal structure and colour vision " (paper by Mr. E. N. Willmer). A meeting was held at the Royal Society of Arts on 7 June for a paper on " The Munsell system " by Dr. W. D. Wright, and one at the Lighting Service Bureau of the Electric Lamp Manufacturers' Association for a lecture on " Illuminants for colorimetry and the colours of total radiators " by Mr. H. G. W. Harding (*Proceedings*, **57** (1945), 222).

The reports of the Sub-Committees on Colour Terminology and Colour Vision Deficiency in Industry are nearing completion. Close contact with the Inter-Society Colour Council in the U.S.A. has been maintained.

The membership of the Group on 31 December was as follows :

Members of the Physical Society	79
Members of other participating bodies	59
Members of five firms subscribing for sustaining membership ..	15
Other members	5
Total ..	158

OPTICAL GROUP

The Third Annual General Meeting of the Group was held at Imperial College on 21 April 1944, when Professor A. O. Rankine and Professor L. C. Martin were re-elected as Chairman and Honorary Secretary, respectively, and the Committee for 1944–45 was elected.

Five Science Meetings were held during the year. At the Northampton Polytechnic on 18 February, Mr. H. H. Emsley delivered a lecture entitled " Some notes on space perception " (*Proceedings*, **56** (1944), 293), and papers on " Contact lenses " by Mr. K.

Clifford Hall and Mr. E. F. Fincham were read and discussed (*Proceedings*, **56** (1944), 272). At a special meeting held jointly with the Scientific and Technical Group of the Royal Photographic Society on 30 May, Mr. E. R. Davies presented for discussion an address entitled " Psychophysics and photography " by Dr. Lloyd A. Jones (*J. Opt. Soc. Amer.* **54** (1944), 66). Three meetings were held at Imperial College on 21 April, 29 September and 24 November ; the first was devoted to a lecture entitled " My fifty years in the optical industry " by Mr. J. W. Hasselkus ; and the subjects of the other two were demonstrations of " High-intensity stereoscopic screen projection " by Mr. A. C. W. Aldis and " A new modification of a ray plotter " by Mr. B. K. Johnson, papers by Mr. H. H. Hopkins, Instr.-Capt. T. Y. Baker, and Mr. E. Wilfred Taylor (" The inverting eye-piece and its evolution ", *J. Sci. Inst.* **22** (1945), 43), and a digest by Mr. C. G. Wynne of papers by Professor A. L. M'Aulay and Mr. F. C. Cruickshank on the design of lens systems (*Proceedings*, **57** (1945), 302, 350, 362).

The membership increased by 10 during the year, and was as follows on 31 December :

Members of the Physical Society	152
Members of other participating bodies	89
Members of twenty-three firms subscribing for sustaining membership	97
Other members	8
Total ..	346

REPORT OF THE HONORARY TREASURER FOR THE YEAR ENDED 31 DECEMBER 1944

In 1944 the excess of income over expenditure (£1144) was larger than in any previous year, and £566 higher than in 1943 ; the total expenditure (£4207) was £278 less than a year ago, and the total income (£5351) was £288 more.

The only item of expenditure showing an increase since 1943 was in respect of the Society's occupation of rooms at 1 Lowther Gardens, where it became necessary to engage a fire-watcher for the greater part of the year. By arrangement with the Secretary of the Royal Commission for the Exhibition of 1851, a senior student at Imperial College was employed in this capacity, the expense being shared equally by the Royal Commission and the Society.

Expenditure on secretarial and clerical services was low on account of shortage of staff, which will, it is hoped, be rectified in the near future.

The income from sales of publications was about the same as in 1943 ; a considerable increase of sales of the *Proceedings* balanced the falls of sales of *Reports on Progress in Physics* and Special Publications. Every other important item of income showed an increase. The charges for advertisements in the *Proceedings* were appropriately raised during the year.

The total value of the Society's investments at the end of the year was £2093 higher than at the end of 1943 ; of this, the newly instituted Charles Vernon Boys Prize Fund accounts for £900, and £1000 was invested in 3 % Defence Bonds early in 1944. The market values showed a slight appreciation.

A further, and larger, grant by the Royal Society from the Rockefeller Gift, to assist the Society to meet war-time publication difficulties, is gratefully acknowledged; the grant has been expended on the reprinting of Parts of the 1942 *Proceedings*.

Owing to the stringency of the paper control and the shortage of original material which it is permissible to publish during the war, both the size of the *Proceedings* and also the frequency of publication of the *Reports on Progress in Physics* have been reduced considerably in the last few years. When such limitations are removed the Society will have reason to be pleased with the favourable balance it has accumulated. In the near future it will be necessary also to acquire a considerable amount of office furniture, not only to replace that now in use, which is the property of the Institute of Physics, but also to meet the needs of the increasing activities of the Society.

(Signed) CLIFFORD C. PATERSON,
Honorary Treasurer.

19 *April* 1945.

INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31 DECEMBER 1944

1943 £	Expenditure	£ s. d.	£ s. d.
	To		
266	"Science Abstracts"		225 6 6
	Normal Publications:		
1687	"Proceedings"	1685 19 11	
67	Agenda Papers and Notices	58 18 0	
1119	"Reports on Progress in Physics"	779 3 9	
			2524 1 8
267	Postage on Publications and General Correspondence		234 6 1
53	Expenses at Meetings		61 18 9
40	Honoraria to Special Lecturers		26 5 0
	Administration Expenses:		
934	Secretarial and Clerical Assistance and Office Expenses	910 0 10	
52	1 Lowther Gardens (including Air Raid Precautions)	224 13 2	
			1134 14 0
578	*Balance, being excess of Income over Expenditure, carried forward to Accumulated Fund*		1144 1 2
£5063			£5350 13 2

1943 £	Income	£ s. d.	£ s.
	By		
	Subscriptions:		
39	Entrance Fees	54 12 0	
1920	Fellows	2004 19 0	
140	Student Members	147 10 0	
25	Colour Group	22 18 0	
58	Optical Group	66 2 0	
140	For "Science Abstracts" and Advance Proofs	147 14 7	
			2443 15 7
	Sales:		
884	"Proceedings"	1019 2 5	
903	"Reports on Progress in Physics"	852 3 10	
134	Special Publications	47 15 10	
			1919 2 1
307	Advertisements in "Proceedings"		333 13 6
283	Dividends from Investments		304 2 0
30	Transfer from Life Composition Fund of amounts paid by Fellows now deceased		50 0 0
200	Publications Grant by the Royal Society from the Rockefeller Foundation Gift		300 0 0
£5063			£5350 13 2

BALANCE SHEET AS ON 31 DECEMBER 1944

LIABILITIES	£ s. d.	£ s. d.
Sundry Creditors		172 18 10
Life Compositions:		
As on 31 December 1943	1609 0 0	
Add Payments during year	115 10 0	
	1724 10 0	
Less Transfer to Income and Expenditure Account	50 0 0	
		1674 10 0
Subscriptions received in advance:		
Members	33 5 4	
Publications	315 19 9	
		349 5 1
SPECIAL FUNDS:		
W. F. Stanley Trust Fund	259 0 0	
Duddell Memorial Trust Fund	346 2 9	
"Progress Reports" Reserve Account	83 1 0	
Herbert Spencer Legacy	239 7 6	
Charles Chree Medal and Prize Fund:	1949 3 0	
Charles Vernon Boys Prize Fund	907 1 7	
		3783 15 10
GENERAL FUND:		
As on 31 December 1943	5661 6 6	
Add Balance of Income and Expenditure Account	1144 1 2	
		6805 7 8
		£12785 17 5

ASSETS	£ s. d.	£ s. d.
Investments at Market Value on 31 December 1939:		
W. F. Stanley Trust Fund	259 0 0	
Duddell Memorial Fund	374 0 0	
Charles Chree Medal and Prize Fund	1866 10 0	
Charles Vernon Boys Prize Fund	900 0 0	
General Fund	6505 10 0	
		9905 0 0
(Market Value on 31 December 1944: £11266)		
Dividends due from Investments		54 18 1
Inland Revenue—Income Tax recoverable for 1944		45 0 5
Subscriptions due		15 15 0
Sundry Debtors		277 15 7
Stock of Paper and Binding Material		199 6 6
Cash at Bank	392 16 2	
,, *in Post Office Savings Bank Account*	1893 5 1	
,, *in hand*	2 0 7	
		2288 1 10
		£12785 17 5

We have audited the above Balance Sheet and have obtained all the information and explanations we have required. We have verified the bank balances and the Investments. In our opinion such Balance Sheet is properly drawn up so as to exhibit a true and correct view of the state of the Society's affairs according to the best of our information and the explanations given to us and as shown by the books of the Society.

SPENCER HOUSE, SOUTH PLACE, E.C. 2.
6th April 1945.

KNOX, CROPPER & Co.,
Chartered Accountants.

b 2

LIFE COMPOSITION FUND ON 31 DECEMBER 1944

	£	s.	d.
20 Fellows paid £10	200	0	0
1 Fellow paid £10 10s.	10	10	0
1 Fellow paid £15	15	0	0
15 Fellows paid £21	315	0	0
36 Fellows paid £31 10s.	1134	0	0
	£1674	10	0

SPECIAL FUNDS

W. F. STANLEY TRUST FUND

	£	s.	d.		£	s.	d.
Carried to Balance Sheet	259	0	0	£300 Southern Railway Preferred Ordinary Stock	199	0	0
				£442 Southern Railway Deferred Ordinary Stock	60	0	0
	£259	0	0		£259	0	0

DUDDELL MEMORIAL TRUST FUND

Capital

	£	s.	d.		£	s.	d.
Carried to Balance Sheet	374	0	0	£400 3½% War Loan Inscribed "B" Account	374	0	0

Revenue

	£	s.	d.		£	s.	d.
Balance on 31 December 1943	36	5	3	Interest on War Loan	14	0	0
Medals and Certificates	5	12	0	Balance carried to Balance Sheet	27	17	3
	£41	17	3		£41	17	3

"PROGRESS REPORTS" RESERVE ACCOUNT

	£	s.	d.		£	s.	d.
Balance carried to Balance Sheet	83	1	0	Balance on 31 December 1943	83	1	0

HERBERT SPENCER LEGACY

	£	s.	d.		£	s.	d.
Balance carried to Balance Sheet	239	7	6	Balance on 31 December 1943	239	7	6

CHARLES CHREE MEDAL AND PRIZE FUND

Capital

	£	s.	d.		£	s.	d.
Balance carried to Balance Sheet	1865	16	4	Balance on 31 December 1943	1865	16	4

Revenue

	£	s.	d.		£	s.	d.
Balance carried to Balance Sheet	83	6	8	Balance on 31 December 1943	14	9	6
				Interest on Investments	68	17	2
	£83	6	8		£83	6	8

CHARLES VERNON BOYS PRIZE FUND

Capital

	£	s.	d.		£	s.	d.
Balance carried to Balance Sheet	900	0	0	£1132 16s. 10d. 2½% Consols	900	0	0

Revenue

	£	s.	d.		£	s.	d.
Balance carried to Balance Sheet	7	1	7	Interest on Investment	7	1	7

THE HISTORY AND FUTURE OF THE PHYSICAL SOCIETY

By Prof. E. N. da C. Andrade, F.R.S.

Presidential Address delivered 23 *May* 1945

§1. INTRODUCTION

At a time, like the present, of change and flux, at what is clearly the end of one great historic period and the beginning of a new phase of world history, it is appropriate that we should each examine our position and form appropriate plans for the future. What is true for individuals is no less true for corporate bodies, which have the double duty of satisfying the needs of the present and preparing for the demands of the future. It may, therefore, be appropriate for the retiring President to examine the present state of the Physical Society and tell the Fellows something of its plans for the future. Further, to judge the present position wisely, and to estimate our rate of progress, which, as well as our present position, it is necessary to know if we are to judge of our future—since positions and velocities are both needed if we are to calculate the future state of a system—it is advisable to make a brief survey of the past. I shall therefore run briefly through certain phases of the history of the Society, and refer to the introduction of the various innovations which now represent established features of the Society, so that we may see how our wise predecessors have built up the traditions which we now proudly possess. After some account of our present position, I propose to outline our ambitions for the future, with a word as to how we hope to realize them.

Before I proceed, however, I should like to refer to the present very healthy state of our Society and to give thanks to those to whom it is mainly due. Looking back to my own early days, I think that some of our younger brethren may be apt to take institutions with which they are connected—University departments, scientific societies, and so on—very much for granted: they may suppose that these exist, carry out their duties and serve by virtue of some inevitable and mysterious corporate existence, some appointed and predestined reason and source. The tides, the underground railway, the ten o'clock lecture, these have their being and their rules, but of how they are sustained and governed very few enquire in their youth. However, to conduct a society like ours, to ensure that your meetings are arranged and announced, to secure distinguished speakers and appropriate places of meeting, to see that the *Proceedings* are properly printed and delivered, and to maintain the efficient running of our organization in a hundred and one details is a matter that requires very skilled and devoted service, as well as considerable tact, knowledge and experience. In war-time, particularly, with shortage of staff, difficulties of communication, fire-watching and other duties not normally imposed, the running of the Society has been a very difficult matter, and we might well have found ourselves at this stage with our affairs in confusion, our publications in abeyance, our members apathetic and diminished, and our influence sadly lessened. That we are, on the other hand, in a flourishing state, with our membership steadily rising and our enthusiasm unchecked, is due in the main to our Honorary Secretaries. They have given far more than we had any right to expect, they have worked unsparingly and unceasingly for our good. Mr. Awbery, the papers secretary, has, for instance, been his own editor of the *Proceedings*; Dr. Jevons, our business secretary, has been his own assistant secretary. They, in fact, with a diminished office staff and a thousand difficulties, working hours which few of us would contemplate, have kept our flag flying in a way for which we can never be sufficiently grateful. I ask you to allow me, on your behalf, to offer our especial thanks to our loyal secretaries. Members of Council, too, have not spared themselves.

§2. BIRTH OF THE SOCIETY

Our Society was founded in 1874. Let us look back at the state of physics at about that date. In the preceding year, 1873, Maxwell had first published his *Electricity and Magnetism*; Crookes had invented his radiometer, and van der Waals had published

the papers containing his celebrated equation. Airy was completing his term of office as President of the Royal Society, and Lord Rayleigh, at the time the Hon. John William Strutt, was elected a Fellow of the Royal Society: his *Sound* was to appear four years later. J. J. Thomson was a student at Owens College, Manchester, under Osborne Reynolds and Balfour Stewart, of whom the last-named became our President in 1886.

In 1874, the year of our foundation, Tyndall was in control at the Royal Institution, but the greater part of his original scientific work had been completed. In that year, however, he delivered, as President of the British Association, his famous address at Belfast, which created a sensation and was, incidentally, the subject of a poetical summary by Clerk Maxwell, which summary was in its turn translated into Greek verse by R. Shilleto. Maxwell was at Cambridge, whither he had gone in 1873, although the main part of the researches by which his name lives was likewise completed. Faraday had died seven years before. Among the great contemporary names in physics were Kelvin, Stokes, Joule, Lockyer, Wheatstone and Crookes: van t'Hoff and Rayleigh were beginning to become famous: Hertz and Arrhenius were boys not yet heard of. In 1875 Oliver Lodge was appointed, at the age of twenty-four, reader in natural philosophy at Bedford College for Women. As regards the general mechanical conveniences of life, the first typewriter was put on the market in this year. The gas engine had been realized and the petroleum internal combustion engine was in its infancy. The Atlantic cable had been in operation a few years. The telephone had been invented, but the first commerical telephone switchboard was not to come for a few years. There was, of course, no electric lighting in the home and no gas-mantle. The first gramophone did not appear until three years later. It may therefore seem hard to some to believe that people could spend happy lives in those days, but we are credibly informed that they did.

As regards the teaching of physics, the Cavendish Laboratory was completed in 1874 and instruction in practical physics started there under Clerk Maxwell. There was only one student in this year, W. M. Hicks, who later become Professor of Physics and the first Vice-Chancellor at Sheffield. Teaching of practical physics was going on at Manchester, under Balfour Stewart, with about ten students doing practical work in the laboratory. Carey Foster had started systematic practical instruction in physics at University College, London, in 1866, to be followed by Grylls Adams at King's College, London, in 1868, and Clifton at Oxford in 1872. Carey Foster had two rooms available for practical work, of which one was his private room and, as far as I can make out, there were about half-a-dozen students carrying out experiments. Carey Foster was the only one there, of course, carrying out research, and he first described his well-known bridge in 1872. As regards Oxford, there was no provision for research: in fact the advancement of knowledge was no part of the professor's duties, and Clifton took care not to exceed his duties. Rucker, the one demonstrator there, was succeeded in 1874 by W. N. Stocker, who became a Fellow of our Society in 1877 and is now our senior surviving Fellow. He recently made a most generous contribution to our Holweck fund.

It is perhaps worth noting that the first papers of Carey Foster, our second President, were all on organic chemistry. In particular, three papers which he published in co-operation with Matthiesen on narcotine are said, by those better able to judge than I am, to be a long step forward in the knowledge of the constitution of the alkaloids. J. H. Gladstone, our first President, subsequently became President of the Chemical Society in 1877, the only case, I believe, of one man having served as President of the two sister Societies. So close were the relations between chemistry and physics in those days.

Returning to the teaching of practical physics in 1874, we will note that it was proceeding under Kelvin in Glasgow, where in 1870 a new laboratory had replaced the disused wine cellars in which instruction was previously given, and then turn to South Kensington. Here, at the College of Science, which had been one of the results of the Great Exhibition of 1851, Guthrie was Professor of Physics, giving regular courses of instruction. Perhaps I may quote from a letter written by Silvanus Thompson in 1875: "I go at one p.m. to Professor Guthrie's lectures on Physics—at first on Hydrostatics and Pneumatics, but just now beginning Sound. He lectures every day except Saturday. He is a ponderous Scotchman, and puts in 'of course' about thirty times each lecture". (This is the kind of thing that students write about their professors!) Later, when he came to know Guthrie well, Thompson paid affectionate tribute to his services to science and to the Society. In the same letter Silvanus Thompson, who became a Fellow in

1875 and President in 1901, mentions that most of the students were teachers in training, and it must be remembered that almost the only future for a professional physicist in those days was some branch of the teaching profession. In particular, if you wished to carry out physical research you had either to hold a teaching post or to possess private means. As for the teaching of physics, and of science in general, in the schools, it was, according to a Royal Commission " regarded with jealousy by the staff, with contempt by the boys and with indifference by the parents ". The general picture of British physics at the time is, then, one that shows a few intellectual giants, like Kelvin, Stokes and Clerk Maxwell, and a number of great but lesser known men keenly engaged in research, while laboratory instruction in physics was beginning at a few centres scattered over the country, at each of which half-a-dozen students or so laboured under some keen enthusiast who made up for indifferent accommodation and equipment by personal skill and devotion.

I have tried, very briefly, to indicate the state of physics as it was in England when our Society was born. The birth was due to a circular letter which Guthrie sent out, saying, " I wish to try to form a Society for Physical Research for showing new physical facts and new means of showing old ones, for making known new home and foreign physical discoveries, and for a better knowledge one of another of those given to physical work ". The consequence of this letter was the inauguration of the Society in the Physical Laboratory at South Kensington, with Dr. J. H. Gladstone as the first President. Gladstone was at the time Fullerian Professor of Chemistry at the Royal Institution and is remembered for the work which he carried out with T. Pelham Dale on the refractive indices of liquids, resulting in their law connecting variation of refractive index with variation of density. The original Fellows who formed the Society numbered 99.

Professor Guthrie, who did not become President until ten years later, took the office of " demonstrator ", which emphasizes that interest in experimental demonstrations which the Society has always shown, and still shows. No doubt the office corresponded to that of " curator of experiments ", to which, in 1662, Robert Hooke was appointed in the newly formed Royal Society. It continued in the Society until 1897, when C. V. Boys, who had hitherto been " Demonstrator and Librarian ", became simply " Librarian ".

§3. SOME NOTABLE CONTRIBUTORS TO THE 'PROCEEDINGS'

Publication of the *Proceedings of the Physical Society of London* began at once, the first paper being one by J. A. Fleming, whom we lost this year, " On the new Contact Theory of the Galvanic Cell ". In the same volume is a paper by McLeod, describing his celebrated vacuum gauge, a paper by Crookes on his radiometer—not the first description of it, but the first considerable discussion—and another by Guthrie on " Salt Solutions and Attached Water ", giving an account of some of his classical work on cryohydrates. The names of Oliver Lodge and Carey Foster also occur. In the first ten years J. A. Fleming, Oliver Lodge, Norman Lockyer, Silvanus Thompson, R. T. Glazebrook, Ayrton and Perry, Arthur Schuster, J. H. Poynting and C. V. Boys are among the frequent contributors, and among contributions from America we have a considerable one by Hall, on the Hall effect—not the very first announcement of the effect, but following close upon it—and a note by H. A. Rowland on this discovery. The average yearly production for these first ten years is about 170 pages. Since those times the standard has been well maintained : in recent times such names as Finch, Ezer Griffiths, Laby, Lennard Jones, Lindemann, Mott, Raman, Rankine, O. W. Richardson, Rutherford and Chadwick and Temple adorn our pages, and I will in particular remind you that many of W. H. Bragg's papers first appeared in our *Proceedings*, and that Sir Edward Appleton's great series of papers on the ionosphere were likewise printed by us, beginning in 1928. One of his very earliest papers appeared in our *Proceedings* in 1921. He is a pretty shrewd judge, and chose the Physical Society for his papers, I believe, when he found out that not only is our standard high but that we can be relied upon to print important papers with great expedition and in a worthy manner. Of recent years our annual volume has consisted of some 700 or 800 pages, and has on occasion exceeded 1000 pages. We adopted our present large format in 1921, and I think it is generally agreed that our standard of production is commendable, so that as regards quality, quantity and presentation we have no reason to be ashamed of our *Proceedings*. We have, however, plans for extending our publication, to which I will refer later.

I have glanced at our *Proceedings* : another way of estimating our position in the world of physics is to look at the list of past Presidents. It includes Lord Kelvin, G. F. Fitzgerald, Sir Oliver Lodge, J. H. Poynting, H. L. Callendar, Sir Arthur Schuster, Sir J. J. Thomson Sir Charles Boys, Sir William Bragg, and Sir Arthur Eddington, to mention only the dead. This is, indeed, a gratifying list, justifying our claim to have been supported—actively supported, for all these took a keen interest in the Society and did not regard the office as a sinecure—by the greatest physicists of the time. If I am to mention only one of the living past Presidents it shall be Sir Frank Smith, whom I choose because he presided brilliantly at our Jubilee Celebrations in 1924, and rendered outstanding services to the Society, both during and after his years of office.

§ 4. PUBLICATIONS

As regards our publications, in the first place we have our *Proceedings*, in which, as I have already said, most of the great names in British physics have appeared. From the time of Rowland we have from time to time been gladdened by American contributors : R. W. Wood in particular has sent us some of his most interesting papers.

In 1934 appeared the first volume of our *Reports on Progress in Physics*. It was J. J. Thomson, our President from 1914 to 1916, who first suggested the issue of these *Reports*, and he generously put up some money for a guarantee fund. Fortunately, after the first year this fund has not been called on. The *Reports* have found a warm welcome on both sides of the Atlantic and have evidently met a need. Volumes I to V are out of print. Four volumes have already appeared since the outbreak of war, and another, Volume X, is in active preparation. We have been fortunate in obtaining outstanding articles from American physicists, especially since the war : the fact that the energetic editor of the *Reports*, Dr. W. B. Mann, has been for some time resident in America has helped to secure American co-operation, which we greatly value. This may be a suitable place at which to express our thanks to the American Institute of Physics. This organization is not a counterpart of our Institute of Physics, but a publishing body which comprises the corporate membership of five societies, namely, the American Physical Society, Optical Society of America, Acoustical Society of America, Society of Rheology and the American Association of Physics Teachers. The Institute has been of great help to us during the war years by assisting in every way to distribute our *Progress Reports* among American physicists with the minimum formality, and has always shown us the greatest goodwill.

Besides these serial undertakings, we have from time to time issued special publications. Four special reports won instant recognition : those of Sir James Jeans on *Radiation and the Quantum Theory* (1st edition 1914, 2nd edition 1924) ; Sir Arthur Eddington on *Relativity Theory of Gravitation* (1920) ; A. Fowler on *Series in Line Spectra* (1922) ; and W. Jevons on *Band Spectra of Diatomic Molecules* (1932). Each of these appeared at a time when it filled an urgent demand. We published the *Collected Papers* of Wheatstone (1879) and of Joule (1884). The *Papers and Discussions* of the International Conference of Physics held in London in 1934, in the organization of which we played a great part, were published by the Society, and the proceedings of various Discussions organized by us, such as, e.g., the *Discussion on Vision* and the *Discussion on Audition*, have been published.

A word as to our future policy in regard to publications may be welcome. It was suggested at Council in 1943 that there was a need of a medium for the publication of original papers on physical problems whose main interest was industrial and technical, corresponding to the German *Zeitschrift für Technische Physik*, which was initiated in 1920, at the time of the foundation of the *Zeitschrift für Physik*. There seemed general agreement as to the reality of the need, and it has been decided, after due deliberation of the proposal by a Joint Committee set up by our Society and by the Institute of Physics, to which I shall refer later, that special provision should be made for papers on the more technical aspects of physics. It has not yet been decided whether to divide the *Proceedings* into two parts, called, say, "A" and " B ", or whether to bring out a separate journal, to be called *Physica Technica*, or some such title. Here, again, Council will welcome expressions of opinion from the Fellows. In any case, everything points to the fact that it will soon be necessary for us to issue two volumes a year, instead of the customary one volume.

There is, however, a further publication in view. Many of the discussions of Groups are of great interest, while not describing in the first place original work. It is widely considered that there may be a place for a journal which shall deal mainly with discussions, papers which survey authoritatively certain restricted branches of physics, critical reviews of current problems and so on. Proposals have been made, but as nothing has yet been decided I can merely assure you that the matter is receiving consideration, and further, that nothing will be done by us without consultation, through the Joint Committee, with the Institute of Physics.

I cannot leave the subject of publications without referring to the goodwill that the Royal Society has extended of recent years to our *Proceedings*. I think that I may venture to say that any wish which we may cherish to take a greater part in the publication of British physical papers will not meet with a rebuff from that quarter.

§ 5. THE ANNUAL EXHIBITION

One of the most successful and useful undertakings of the Society is our Annual Exhibition of Scientific Instruments and Apparatus. This started from very humble beginnings. In 1905 there was held an " informal meeting ", at which an exhibition of apparatus was given by the following firms : R. & J. Beck ; Cambridge Scientific Instrument Co. ; Crompton & Co.; Elliot Bros. ; Everett, Edgcumbe & Co. ; Fricker & Miller ; Peter Heale ; Adam Hilger ; Isenthal & Co. ; Marconi Wireless Telegraph Co. ; Nalder Bros. & Thompson ; Newton & Co. ; R. W. Paul ; Pitkin & Co. ; Rumney & Rumney ; Synchronome Co. ; Carl Zeiss. Most of these firms are familiar to you and were among our most recent list of exhibitors. The attendance was about 240, which was greater than expected. In 1906 was held a like informal exhibition, with some fresh names, familiar to us now, among the exhibitors—I may mention Casella ; Evershed and Vignoles ; Gambrell ; Ross ; J. Swift & Sons ; and Alexander Wright. In 1907 a more formal exhibition was held, which attained to the dignity of a notice in *Nature* (**77**, 159, 1907). Since that time the function has yearly increased in importance : at our last Exhibition before the war, the twenty-ninth, 80 firms exhibited, and the total attendance over the three days was nearly nine thousand. Our Exhibition catalogues of recent years have been most valuable guides to the state of the scientific instrument industry, not only in this country, but elsewhere, and the prudent have kept their copies. The catalogues as issued for the first few exhibitions were mere leaflets. I only know of one complete set of catalogues from the start, that in the possession of the Society.

It may be of interest to refer to one or two of the stages by which the Exhibition has progressed. In 1909 discourses of general interest, by leading physicists, were introduced as an attraction, the first two being given by C. V. Boys and Silvanus Thompson. In 1926 three new sections were added, devoted respectively to recent research of instrumental interest, effective lecture experiments, and apparatus ; and experiments of historical interest. In 1930 a competition for craftsmanship and draughtmanship was initiated, for learners and apprentices belonging to the exhibiting firms, which brought forth some exhibits of the greatest merit and awakened general interest.

As regards the future, you will be glad to hear that some months ago your Council decided that there was a good prospect that the Society would be able to hold an Exhibition in January 1946, and set up a Committee, under the chairmanship of Professor G. I. Finch, to organize matters. I am happy to say that the response from the industry is very encouraging, and we hope to have a display of instruments and apparatus that will be truly representative of the art and that will interest not only our own people but also to our friends from other parts of the world.

§ 6. PHYSICAL SOCIETY GROUPS

A recent innovation are our discussion groups, initiated during the war. Of these we have at present two, the Colour Group and the Optical Group. The Colour Group arose spontaneously out of discussion at one of our science meetings in 1940. At this meeting Dr. W. D. Wright suggested that the Society should undertake the organization of the many workers who were interested in the discussion of the various physical aspects of colours, so that they might have definite times and places of meetings and pre-arranged and pre-announced programmes of proceedings. Dr. Allan Ferguson, the reigning

President, who was in the Chair, favoured the suggestion, and as a result the inaugural meeting of the Colour Group was held in January 1941, under the Chairmanship of Dr. Wright, who very successfully conducted the Group through its difficult initial stages. In due course he was succeeded by Mr. J. Guild, who recently handed over to Dr. R. K. Schofield a very flourishing organization, the present membership being about 160.

The Optical Group was founded, at the initiation of Professor L. C. Martin and Dr. W. Jevons, shortly after the foundation of the Colour Group. It was constituted to meet in the first place the specific needs of the members of the old Optical Society, which amalgamated with the Physical Society in 1932. Professor Martin was formerly an officer of the Optical Society. Under the wise guidance of its first chairman, Professor A. O. Rankine, who was our President from 1932 to 1934, the Group has held very successful war-time meetings, and now numbers about 350 members. The present Chairman is our old friend Instr.-Captain T. Y. Baker, R.N., who joined the Optical Society thirty-five years ago.

Shortly after our first Group was organized, the Institute of Physics started a policy of forming groups, and the inaugural meeting of its first group, which deals with *Industrial Radiology*, was held in May 1941. Two other groups were subsequently formed by the Institute, on *Electronics* and *X-Ray Analysis* respectively. I am glad to say that, with the object of avoiding competition and confusion in the setting-up of groups, in publications and in all matters in which both bodies are concerned, a permanent Joint Committee has been constituted " to facilitate co-operation between the Physical Society and the Institute of Physics ". Some little time ago Sir Alfred Egerton wrote to me suggesting that the Society should form a Low-Temperature Group, for the discussion of the production and measurement of low temperatures and the properties of matter at such temperatures. In this connection low temperatures are understood to be those below $-80°$ C. or so and not only helium temperatures, which are, of course, included. It has now been decided, at the recommendation of the Joint Committee, to initiate such a Group, and we are calling an informal meeting of some of the leading workers in this field to discuss the matter. Any suggestions from Fellows will, of course, be welcomed by Council.

§7. ACCOMMODATION

Looking to the future, undoubtedly one of our greatest needs is suitable accommodation. Since 1939 we have, by the great kindness of The Royal Commission for the Exhibition of 1851, been housed at Lowther Gardens. Our sincere and cordial thanks are due to our generous hosts, the Commissioners, and in particular to their secretary, Dr. Evelyn Shaw, whose kindliness and consideration will always be remembered with pleasure and gratitude by the officers of the Society. Without the hospitality of the Commissioners we should have been in sore straits. It would, however, be an affectation to pretend that the two uppermost floors of 1 Lowther Gardens constitute premises suited to our present needs. The rooms, originally bedrooms in a private house, can be adapted to ordinary office uses, but there is no room suited for use as a library, and, of course, no kind of a lecture room at all.

Our location in South Kensington is advantageous so long as we have to depend for theatres for our meetings on the kindness of the Imperial College, or on occasion of the Science Museum, whose director, Colonel Mackintosh, has always shown us great goodwill. It is, however, not very easy of access. We require a more central site and we require convenient rooms where we can not only carry out our office business and discharge our various duties to our Fellows, but also receive worthily our guests from the Empire and other countries overseas. Our needs may be said to be some eight adequate offices of one sort or another, suitable space for the storing of archives, an adequate library, a Council Room, a lecture theatre accommodating about a hundred auditors and a lecture theatre capable of seating some three hundred auditors. The Council Room and lecture theatres would, of course, be needed for intermittent, and not daily, use, and the economic scheme would be to share them with other scientific societies.

The ideal scheme of accommodation would, then, seem to be a central building adapted to house the chief scientific societies, a building in which each society would have its own block of offices, and in which council rooms, lecture theatres and public rooms would be at the disposal of the various participating societies. Common arrangements might advantageously be made for the printing of *Proceedings* and other periodical publications

of the societies and for their dispatch. I am glad to say that our august mother, the Royal Society—for all the chief scientific societies in England were founded by her Fellows, and are in some sort descended from the Royal Society—is keenly interested in such a scheme. As the result of her activities a delegation, headed by the President of the Royal Society, was received on 13 October 1944, by the Lord President of the Council, the Chancellor of the Exchequer and the Minister of Works and Buildings. The object of the delegation was to represent the urgent need of a comprehensive scheme for the future housing of the Royal Society and other scientific societies. I was fortunate enough, in my capacity as your President, to be a member of this delegation and to be allowed to represent our needs to the Ministers present. Their reply to the delegation, although necessarily non-committal, was by no means discouraging. The Royal Society was asked to submit a detailed scheme of the needs of all the societies involved and has been collecting the information, of which we have supplied our part. It would be a graceful acknowledgment of the part which organized science has played in the successful prosecution of the war if the Government were to provide a worthy central home in which various scientific societies could live together under the fostering influence of the Royal Society.

Such a building would solve one of our most urgent needs, which is convenient and accessible library accommodation. As regards books, we are tolerably well off as far as the periodicals of physics are concerned, but we are less satisfactorily equipped with text-books and specialized works. We have some historical books of interest, the gifts of Fellows of the Society. The library facilities are much needed by our Fellows, but the inaccessibility and inadequacy of our library space prevent full use being made of what books we have, and also stand in the way of development. I feel that if we could properly display our possessions and comfortably accommodate our readers, we should find that Fellows would support our library with gifts and bequests, and that, further, Council would allocate larger sums for library purposes. We have to welcome a very recent bequest from Mr. G. L. Addenbrooke for the purchase of books of a special character, and we hope to receive further presents.

The matter of library organization under the central building scheme has already received attention. A meeting of librarians of various scientific societies, including our own, was convened by the Royal Society and deliberated on various possibilities. At this meeting we were represented by our Librarian, Professor L. C. Martin, to whose work for the Society I should like to pay tribute. I have not the time, nor have I obtained permission, to describe to you the results of these deliberations, but I thought that you would like to know that the whole matter of a central library covering various branches of science had been discussed from the point of view of peace, economy and convenience.

§8. SPECIAL LECTURES

We have under our control a series of special lectures of which we are proud. The oldest of such functions is the Thomas Young Oration, founded in 1907, which we took over when the Optical Society amalgamated with us in 1932. Of recent years this has been given biennially. We have often made this oration an opportunity of hearing one of our distinguished foreign colleagues, and this year, for the first time, we are to have an orator from Sweden, Professor Ragnar Granit, who will address us on colour perception.

The annual Guthrie Lecture was founded in 1914 to commemorate our founder, Professor Frederick Guthrie. The list of Guthrie lecturers includes some of the most famous names in physics. We have drawn our Guthrie lecturers from America, France, Denmark, Germany, Holland and Sweden, as well as, of course, Great Britain. Fellows will remember that last year we were delighted to draw, for the fourth time, our Guthrie lecturer from America, Professor Joel Hildebrand. This year we are to hear Professor A. Duperier, a Spaniard, who has been working in England for some years.

The biennial Charles Chree Medal and Prize was founded by Miss Jessie S. Chree to commemorate her brother, our President from 1908 to 1910, and carries a very handsome emolument. Professor S. Chapman, a Londoner, was the first recipient: Professor B. F. J. Schonland, from South Africa, the second: this year, as third Chree Medallist, we are to hear Dr. J. A. Fleming, of the Department of Terrestrial Magnetism of the Carnegie Institution, Washington.

Of the Duddell Medal you have heard this afternoon. We shall shortly be proceeding to award a new prize, the Charles Vernon Boys Prize, which derives from a bequest of

money by Sir Charles Boys. It is to be given annually for distinguished research in experimental physics, carried out within five years preceding the date of the award.

The first Rutherford Memorial Lecture was given in 1942 by his colleague and our old friend, Professor H. R. Robinson. This year we are to hear the second Rutherford Lecture from Professor J. D. Cockcroft.

We have on hand a new project which I have very much at heart, the foundation of a Holweck Prize, the object of which is to foster friendship and co-operation between British and French physicists. It is named after Holweck, perhaps the most skilful experimenter that France has produced of recent years. He was the kind of man to whom we award the Duddell Medal, and he was murdered in Paris by the Gestapo. It is our intention that the prize shall be given in alternate years to a British and to a French physicist, and that each prize-winner shall visit the capital of the other country to receive it. We have appealed for subscriptions, and the initial response has been very encouraging. We are just inviting certain of the leading firms connected with physical research to subscribe to the Holweck fund, and I hope that all present will do their best to forward this project. The response of our French friends to our gesture has been all that we desired.

§ 9. THE SOCIETY TO-DAY

This leads me to say a word about our relations with other countries and with other societies. I have already referred to our very cordial friendship with the United States, from which country we so often draw our special lecturers. I may say that we have been promised some excellent articles from America for our *Progress Reports*, which have a warm welcome over there.

Last year we had the pleasure of welcoming M. Boutry, representing the Société Française de Physique, at a Science Meeting, and of greeting through him our French colleagues who have held up their heads and maintained their scientific and patriotic ideals through times of such hard trial, in spite of all that the brutal invader could do. We also heard an outstanding lecture from M. Guinier. Our relations with our French colleagues are warm and deep.

Within the Empire our position is firm. We have many Fellows in both Canada and Australia ; nevertheless we should be very glad to welcome more. Professor Schonland, who recently went back to South Africa as the Director of Scientific Research for the Union, was for some time a member of our Council, and will, we are confident, uphold our interests there. Last year we were able to strengthen our ties with our Indian colleagues by taking part, both as a Society and as individuals, in welcoming the Indian scientists visiting this country as guests of the Government. Among them were two celebrated physicists, Professor Meghnad Saha and Professor S. K. Mitra, who addressed us on subjects to which they have made outstanding contributions, Professor Saha at a special meeting held in London, and Professor Mitra both in Cambridge and in London, choosing different subjects for his two lectures. We should like to see more Indian names recorded among our Fellows, and trust that one result of this visit will be an accession to our Indian representation.

In 1944 we elected Professor Joffé, of Moscow, to be one of our Honorary Fellows, the number of which is restricted to twelve. We hope that with improvement of communications we shall be able to hear and see more of our Russian colleagues. We are also keenly anxious to renew our former very cordial relations with the Scandinavian countries and with Holland and Belgium, and trust soon to see some of our old friends from those parts with us again.

While speaking of our international relations, I may say that the Presidents of the Société Française de Physique, of the American Physical Society, and of the Optical Society of America are *ex-officio* Fellows.

To our relations with the Royal Society I have already referred more than once. That great scientific Fellowship has clearly shown that it recognizes the substantial part that we play in the organization of British science and that it will further all our legitimate aspirations. We treasure the goodwill of the Royal Society, and respond with affection and gratitude. With the Faraday Society and the Royal Meteorological Society we are on cordial terms : we have shown how highly we think of the judgment of the latter by choosing one who was their President for three years as our own next President. I have

had occasion to speak of the Committee which has been set up to promote cordial co-operation with the Institute of Physics, and it is the wish of all of us to live on terms of close friendship with that guardian of the professional interests of British physicists.

A very strong feature of the Society is the body of Student Members. At present, by our Articles of Association, a student member must be between eighteen and twenty-six, and cannot remain a student for more than four years. He or she pays no entrance fee and a subscription of only half a guinea, which entitles to admission to all meetings and to receive the *Proceedings*, the Agenda Paper and Notices, and the Catalogue of the Exhibition. The object is, of course, to make it easy for the young physicist to take a full part in our activities and to attract him to become a Fellow when his four-year period is finished.

The Student Membership has increased very much of recent years. For the twenty years from 1903 to 1923 the average number of Student Members was about 7. In 1927 it reached 27, and then began a more or less steady increase. In 1944 the number was 279, the highest figure ever reached. About seventy per cent of our Student Members become Fellows.

We are, then, a flourishing Society, rejoicing in strong international friendships and cordial goodwill at home. That we are flourishing we may claim both in view of our scientific activities, which I have set before you, and of the growth of our membership, illustrated by the graph now shown. You will see that since 1917 our numbers have risen steeply and steadily, except for a bump beginning in 1932 ; this was due to the accession of members from the Optical Society, which merged with us in that year. We can claim, I think, to give our Fellows substantial benefits. The meetings which we organize and the very real fellowship which we foster there and elsewhere mean much to British physicists. We have a library, our ambitions for which I have touched upon when speaking of our aspirations in the matter of accommodation. In the way of publications we supply, free of charge, the *Proceedings*, the *Physics Abstracts* and the catalogue of the Instrument Exhibition, while Fellows can obtain the *Progress Reports* and all other publications at much reduced rates. Our publications and general activities, such as special lectures, have grown immensely since, say, 1910, yet our subscription has remained at two guineas since that date and earlier. In fact, the Physical Society has maintained pre-war—pre-1914 war—charges for a greatly increased service. I do not want to cast a gloom on this ardent gathering, but I feel that I ought to issue a warning that this state of affairs cannot reasonably be expected to go on for ever, and could not have persisted so long if we had not been running with an office staff much too small for our needs. We have managed to carry on only by the personal exertions of the Business Secretary, to which I have already paid tribute, but firstly he cannot be expected to continue in this way, and, secondly, he has, even so, only just been able to keep abreast of the essential work, with the consequence that there is a large accumulation of matters not of first urgency, but which now require attention. We must provide, and pay for, proper staff.

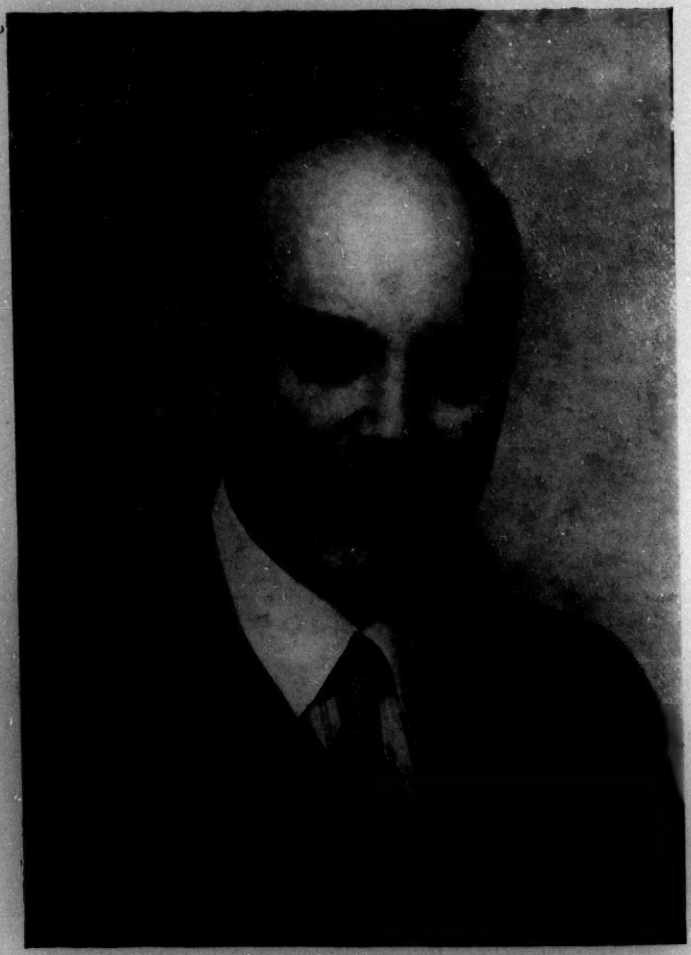
I have been talking of the state of our Society and of its standing in the world of science. I think that you will be interested to know that Council has decided that an application for the incorporation of the Society under Royal Charter shall be made when such a course becomes possible. During the war such incorporations have been in abeyance. If our application is granted we shall, of course, become the Royal Physical Society.

§ 10. THE FUTURE OF THE SOCIETY

Finally, I want to impress upon all Fellows that while, in ordinary parlance, they belong to the Society, actually the Society belongs to them. It depends for its vigour on the support that they give to it : its *Proceedings* are a reflection of their activities in pushing forward the bounds of science : the success of its meetings is measured by the interest which they display. Whether, as we confidently trust, the Society goes forward with ever-increasing usefulness, influence and lustre, or whether, as we have little fear, it declines to a dull mediocrity, is a matter that, in the end, depends on the Fellows. I can assure you, from detailed experience, that you have a Council made up of men with expert knowledge of physics, of physicists and of affairs ; men who have the interests of the Society very near to their hearts and are willing to give up time and energy—nay, anxious to devote their best efforts—to promote these interests. They are not a set of

academic recluses or amiable figure-heads, desirous to see only their own friends on Council, but men who are eager to welcome representatives of the younger physicists when they show interest in the Society and the will and ability to help to advance its interests. I have, for instance, during my term of office as President, had the pleasure of welcoming to Council one who not so many years ago was a research student of mine. Council is always glad to receive from Fellows suggestions for the good of the Society and, in particular, recommendations as to new members of Council have always been and, I am sure, will always be, considered at election time.

These are times of great opportunity. We have been promised a greatly increased measure of financial support for the Physics Departments and their laboratories in our Universities: physics is being used in industry to an extent never before approached in England, and it seems to be realized in high circles that our future prosperity depends to a marked degree on the encouragement of physical research in its technical applications. We have an important part to play in fostering physical research in all its branches by affording worthy means of publication and by promoting discussion and friendly feelings among all physicists, whether engaged in teaching, pure research or industrial research. It is for us at our meetings to bring our younger Fellows and our Student Members into personal contact with the veterans of physics. We have important work to do in promoting international good feeling in the world of physics. I ask you to support your Society in an active manner, with something more than automatic co-operation—with vehemence, with enthusiasm. In your new President you have one who brings all the qualities necessary to lead our Society with brilliant success—outstanding eminence in one branch of our subject, recognized last year by the award of a Royal Medal: a wide knowledge of physics, both theoretical and experimental, to which his war work has added: experience of men and things in various parts of the world: a genuine affection for the Society, which has received practical expression in the work which he has done for it as an active member of Council: a kindly, yet shrewd personality: and three years' experience of high office as President of the Royal Meteorological Society. He will lead you with skill and courage, with adroitness and with enthusiasm, through the many difficulties of the immediate future to a position of acknowledged power and of supreme use in the commonwealth of science. May our Society flourish and increase!



[*Photo*: *Elliott and Fry.*

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President of the Physical Society, 1943–45.